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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/916,231	07/27/2001	Jorg Woner	31833-173684	6862

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EXAMINER

LEE, PATRICK J

ART UNIT

PAPER NUMBER

2878

DATE MAILED: 05/30/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/916,231

Applicant(s)

WORNER, JORG

Examiner

Patrick J. Lee

Art Unit

2878

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 30 April 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☒ Claim(s) 7 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 27 July 2001 is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☒ All b) ☐ Some \* c) ☐ None of:  
1. ☒ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_ 6) ☐ Other: \_\_\_\_\_

### DETAILED ACTION

1. This Action is in response to Response filed by applicant on April 30<sup>th</sup>, 2003.

#### *Claim Objections*

2. Claim 7 recites the limitation "the housing" in claim 6 and claim 1. There is insufficient antecedent basis for this limitation in the claim. Housing is described in claims 4-5, which depend on claim 1. However, housing is not mentioned in either claims 1 or 6.

#### *Claim Rejections - 35 USC § 102*

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 1-3 are rejected under 35 U.S.C. 102(e) as being anticipated by Wetteborn 6,088,085.

With regards to claim 1, Wetteborn discloses a range measurement apparatus comprising of a transmitter module (1), a receiver module (2), an amplifier (12), a fiber optic (4, 10), a time measuring and evaluation unit (13), and lenses (6, 9). Transmitter module (1) comprises of a laser diode (17) and beam dividing mirror (19). Beam dividing mirror (19) serves as a means for coupling out a portion of the light transmitted by laser diode (17) as a reference beam (14). Receiver module (2) is disclosed to be in

a similar configuration with the exception that a photodetector replaces the laser diode (17) as stated in column 5, lines 39-46. Transimpedance amplifier (12) and time measuring and evaluation unit (13) serve as an evaluation unit to calculate the time differences between the time T1 when the reference pulse is received and the time T3 when the reflected pulse is received (see column 4, lines 54-60 & column 5, lines 51-64).

With regards to claims 2-3, beam dividing mirror (19) serves as a diverting unit to guide transmission pulses into a region where a reflecting object is disposed and to also couple out a reference light beam (14).

***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 4-13 & 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wetteborn 6,088,085.

Wetteborn teaches the range measurement apparatus as described in the discussion of claims 1-3.

With respect to claim 4, Wetteborn does not disclose the device being disposed within a housing with an exit window and to dispose the coupling means at the exit window. Such is known and would have been a mere matter of obvious design choice

in order to protect the components of the device and to also provide a way to produce a reference pulse.

With respect to claim 5 & 7, to allow the reference transmission light pulse to be guided within the housing would have been obvious in order to prevent the reference light transmission from being affected by any external disturbances. This would allow for accurate performance of the device.

With regards to claim 6, Wetteborn discloses a fiber optic (4) as a light waveguide disposed downstream of the transmitter (1), but uses this fiber optic to transmit a light pulse to the object. To dispose a light waveguide to direct a reference transmission light pulse into the receiver module (2) is known and would have been obvious in order to ensure that the reference light signal (14) reaches the receiver module (2) accurately.

With regards to claim 8, Wetteborn does not disclose the evaluation unit to calculate the transmit time difference by quantizing the amplitudes, but Wetteborn does disclose the regulation of the amplitude or widths of the pulse by use of a motor (15) and optical attenuator (11) in order to ensure that the width and amplitude of the reference pulse is as similar to those of the reflected pulse. The width of the pulse would be analogous to the register position of the pulse. A memory device is not disclosed, but such is known in the art. To modify Wetteborn accordingly is known and would have been a mere matter of obvious design choice as doing so would be another method of determination of the transit time.

With regards to claim 9, the use of a threshold-value unit to convert analog reflection signals into a binary reflection-signal sequence is known and would have been obvious in order to improve the precision of the device by processing the reflection signals in binary rather than analog.

With regards to claim 10-11, the use of an analog-digital converter is not explicitly disclosed, but such is known and would have been a mere matter of obvious design choice in order to provide the device with a way to determine the difference in the transit time of the pulses.

With regards to claim 12, the evaluation unit determining the position of the maximum is not disclosed, but such is known and would have been obvious in order to allow the detection device to accurately determine the transit time. Wetteborn does disclose the use of a detection threshold to correlate the reference and received pulses in order to determine the transit time.

With regards to claim 13, the memory element being a semiconductor or CCD array is known and would have been obvious in order to allow the evaluation unit to process and store data in order to accurately determine the transit time of the pulses.

With regards to claim 16, the use of this apparatus in safety applications is not disclosed but such would have been obvious as being able to determine distances would aid the work of people in conditions where light is not available.

7. Claims 14-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wetteborn 6,088,085 in view of Bolkow et al 4,699,508.

Wetteborn discloses the system as described in the discussion of claim 1. However, Wetteborn does not disclose the use of a time-measurement module for determining the transit time difference. Such is known and taught by Bolkow et al in a device for measuring the distance. The system comprises of a main receiver (23) receives the reflected light pulse, while an auxiliary receiver (50) receives a pulse coupled out by beamsplitters (45). Time measuring device and run-down control arithmetic and evaluating unit is capable of determining the transit time difference. Bolkow discloses the reference pulse being input into the start input (52) of the time measuring device, while the reflected pulse is input into the stop input (24) of the time measuring device. To modify Wetteborn accordingly would have been obvious as to do so would allow for the determination of the transit-time difference, which can be used to determine the distance to an object.

### ***Response to Arguments***

8. Applicant's arguments with respect to claims 1-16 have been considered but are moot in view of the new ground(s) of rejection.

### ***Conclusion***

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Schwarte 4,734,587; Schwarte 4,737,624; Hug 5,180,922; and Moll et al 6,265,725 all disclose optical distance determination devices.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Patrick J. Lee whose telephone number is (703) 305-

3871. The examiner can normally be reached on Monday through Friday, 8:00 am to 5:30 pm.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David P. Porta can be reached on (703) 308-4852. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 746-9558 for regular communications and (703) 306-5511 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-1782.

Patrick J. Lee  
Examiner  
Art Unit 2878

PJL  
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May 22, 2003

  
**DAVID PORTA**  
**SUPERVISORY PATENT EXAMINER**  
**TECHNOLOGY CENTER 2800**